

Q1: Use Cholskey method to solve the following system.

$$4a + 2b + 14c = 14$$

$$2a + 17b - 5c = -101$$

$$14a - 5b + 83c = 155$$

Q2: Using the least square approximation, find the least square prediction line for the following data.

x	2	3	5	7	9
f(x)	0.6	1.2	1.9	3.7	5.9

Q3: Find the Lagrange interpolation polynomial for the following data and approximate value of $f(x)$ for $x = 4$

x	3	5	7	8
f(x)	3	1	6	4

Q4: Use the forward difference to approximate the derivative of $\cos(x)$ at $x = \pi/3$ for
(a) $h = 0.1$ (b) $h = 0.01$ (c) $h = 0.001$ (d) $h = 0.0001$

Q5: Suppose you are given the following matrix. Verify whether $\lambda = 2$ and $\lambda = 3$ are two eigenvalues. Also find the eigenvectors.

$$A = \begin{Bmatrix} 1 & 1 \\ -2 & 4 \end{Bmatrix}$$